Catalogue

OF

Columbia University

Portland, Oregon

FOR

1915-1916

With Announcements for 1916-1917

COLUMBIA UNIVERSITY

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DIRECTORY OF THE UNIVERSITY

The FACULTY—Address:

COLUMBIA UNIVERSITY,

PORTLAND, OREGON.

The STUDENTS—Address:

As for the Faculty.

Long distance telephone messages reach the University direct through the service of the Pacific Telephone and Telegraph Company. All mail matter, telegrams and express packages should be directed to the address given above.

The University is on the Willamette River, three miles down stream from Portland, and is about twenty minutes' ride by taxicab from all depots.

The St. Johns car line and the Portsmouth car line of the Portland Street Railway Company run directly to the University. The stop for the University is called University Park, or Fiske Street.

CALENDAR

1916

SEPTEMBER	6.	Entrance Examination and Registration.
	7.	Classes begin.
	27.	Reading of University Regulations.
OCTOBER	9.	Columbian Assembly.
	29.	Annual Retreat begins.
NOVEMBER	1.	All Saints' Day.
	15.	Mass for deceased students.
	28-29.	Examinations.
	30.	Thanksgiving Day.
DECEMBER	3.	Columbian Assembly.
	8.	Feast of the Immaculate Conception.
	22.	Christmas Vacation begins.

1917

JANUARY	3.	Classes begin.
FEBRUARY	1-2.	Examinations.
	5.	Second Term begins.
	19.	Columbian Assembly.
	22.	Washington's Birthday.
MARCH	26.	Columbian Assembly.
APRIL	3-4.	Examinations.
	5.	Easter Vacation begins.
	10.	Classes begin.
	30.	Columbian Assembly.
MAY	3.	Founders' Day.
	17.	Ascension Day.
	28.	Columbian Assembly.
	30.	Decoration Day.
JUNE	1.	English Medal Essays.
	4-5.	Examinations.
	6.	Graduation Exercises.

EXECUTIVE OFFICERS OF THE UNIVERSITY

Rev. JOHN T. BOLAND, C. S. C.
PRESIDENT

Rev. HUGH S. GALLAGHER, C. S. C.
VICE-PRESIDENT

Rev. GEORGE J. MARR, C. S. C.
DIRECTOR OF STUDIES

Rev. THOMAS H. CORBETT, C. S. C.
PREFECT OF RELIGION

FACULTY

Rev. JOHN T. BOLAND, C. S. C.
PRESIDENT

Rev. THOMAS H. CORBETT, C. S. C.
COMMERCIAL BRANCHES

Rev. JAMES S. READY, C. S. C.
MATHEMATICS

Rev. HUGH S. GALLAGHER, C. S. C.
LATIN AND GREEK

Rev. GEORGE J. MARR, C. S. C.
HISTORY AND FRENCH

Rev. LEO J. HEISER, C. S. C.
CHEMISTRY AND BIOLOGY

Rev. DOMINIC J. CANNON, C. S. C.
PHYSICS

Rev. FRANCIS T. MAHER, C. S. C.
ENGLISH

Rev. WALTER J. O'DONNELL, C. S. C.
SPANISH AND MUSIC

Rev. WILLIAM F. CUNNINGHAM, C. S. C.
PHILOSOPHY AND CIVICS

Bro. TOBIAS, C. S. C.
CHRISTIAN DOCTRINE

Bro. HUBERT, C. S. C.
ARTISTIC DRAWING

Bro. NORBERT, C. S. C.
FRENCH AND GERMAN

Mr. DOMINIC L. CALLICATE, C. E.
MATHEMATICS AND DRAWING

Mr. MORRISON A. CONWAY, C. E.
MATHEMATICS

Dr. D. O. WEBSTER
ATTENDING PHYSICIAN

DIRECTORS OF HALLS

ADMINISTRATION HALL

Rev. JAMES S. READY, C. S. C.

Bro. TOBIAS, C. S. C.

CHRISTIE HALL

Rev. LEO J. HEISER, C. S. C.

Rev. WALTER J. O'DONNELL, C. S. C.

Rev. WILLIAM F. CUNNINGHAM, C. S. C.

COLUMBIA UNIVERSITY

Columbia University was founded in the year 1901 by the Most Reverend Alexander A. Christie, D. D., the present Archbishop of the See of Oregon City. The institution is conducted by the Congregation of the Holy Cross, a religious body of men devoted to the higher education and Christian training of young men. Since the close of the first scholastic year the school has been conducted by this eminent teaching body.

The University is beautifully and healthfully placed on a location ideal in its surroundings for the pursuit of study and the development of strong, manly character. The eastern bank of the Willamette River in northern Portland rises abruptly to a height of one hundred and eighty feet, and from this elevation the University grounds and buildings afford a magnificent outlook on an inspiring stretch of scenery, unsurpassed in grandeur anywhere. One sweep of the vision takes in the quiet freshness of the Coast Range, the solemn, rugged features of the Cascades, five snow-capped mountain peaks, the gleaming flood of the majestic Willamette—all of which form a gorgeous panoramic setting for the city of Portland.

The mild climate of Western Oregon particularly commends the location of the University. Throughout the entire year the temperature varies little. Excessive cold or heat is comparatively unknown. Portland's death rate has been reputed the lowest of any in the country. Extensive grounds afford ample opportunity for physical exercise and outdoor sports so necessary to the developing student.

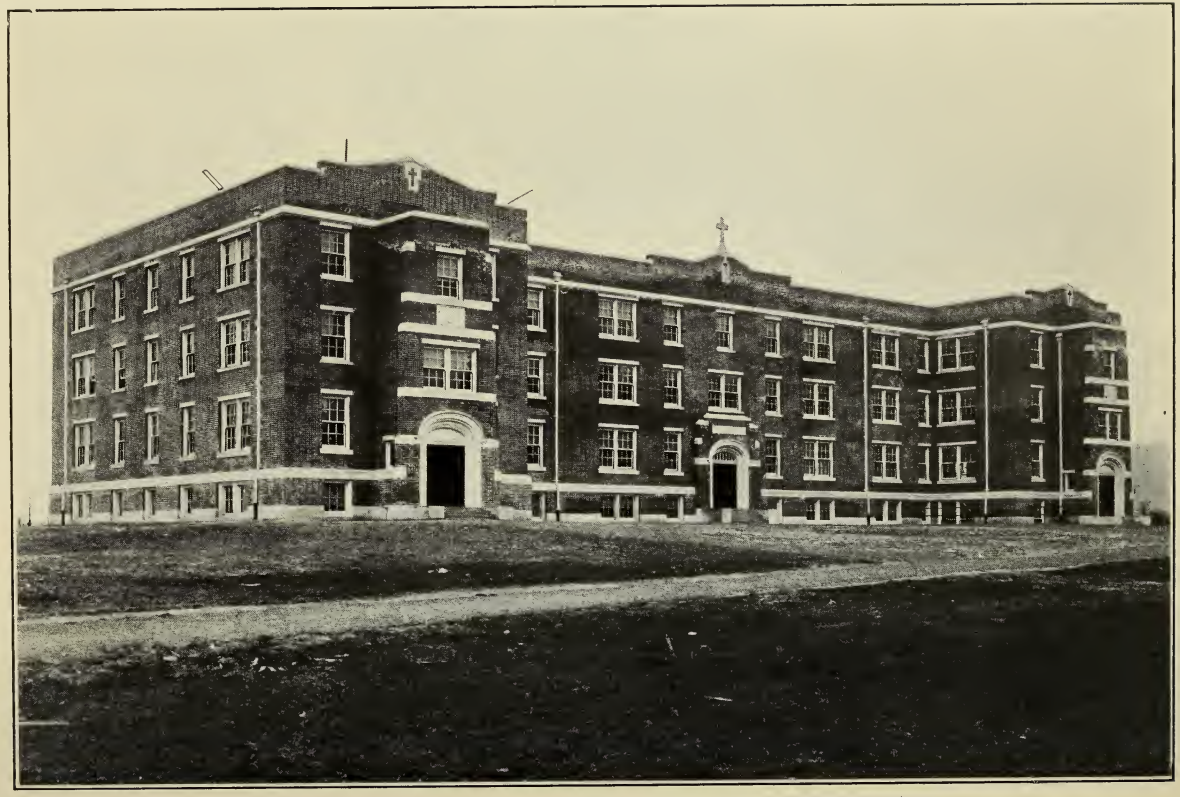
UNIVERSITY BUILDINGS

THE ADMINISTRATION BUILDING

The principal structure on the University grounds fronts Portland and overlooks the main channel of the Willamette River. It is a brick building, five stories in height, and is built in a strong, beautiful style of architecture. The scientific museum is temporarily located here. It also contains the executive offices, private rooms for members of the faculty, elementary chemical laboratories, class rooms, dining rooms and dormitories for the students. This building is lighted by electricity and gas and heated by steam.

THE LIBRARY

The Library is well adapted to the literary and scientific work of the students, and though sufficiently large and comprehensive at present, is constantly being added to as progress is made in the various departments. There is also a separate department under special management for the use of the younger students. Ample reading room is provided where certain rules conduce to make pleasant and profitable the time spent in reading or research.



CHRISTIE HALL, NEW DORMITORY

CHRISTIE HALL

Christie Hall, a model school dormitory, is located northeast of the Administration Building and faces the campus. It is a beautiful four-story brick building, one hundred and eighty-six feet long and seventy feet wide, built in the Tudor style of architecture. The main part of this hall is devoted exclusively to one hundred and twenty-two private rooms for students. In the way of comfort, convenience and sanitary appointments, it embodies the last word in the school builder's art. All the rooms have a fine outlook. They are well lighted and ventilated; for artificial light, electricity and gas are used. The heating is by steam. Each room is equipped with a sanitary wash bowl with hot and cold water attachments. A few rooms are equipped with private bath and toilet. A vacuum cleaning system throughout the hall reduces to a minimum the spread of dust. Each floor is furnished with baths and lavatories.

Christie Hall also contains the college chapel and is the temporary location of the library. The lower floor is devoted to bowling alleys, a billiard room and smoking room and a large assembly hall. The interior finish is Oregon fir; the exterior is red brick with white trimmings. Rates for rooms in this hall vary according to size and location of room

THE SCIENTIFIC DEPARTMENT

is located in the north wing of the Administration Building. The departments of Physics, Philosophy, Botany and Biology have recitation rooms and laboratories in this section. The extensive equipment for each of these departments is constantly being augmented.

THE CHEMICAL LABORATORIES

occupy a large section of the fourth floor of the main building. Here are the general inorganic, organic and elementary chemical laboratories. Each laboratory is provided with ample hood accommodations, and each desk is furnished with water, gas and suction.

THE INFIRMARY

This department of the University is devoted to the care of sick students. It consists of rooms for the use of students during illness. They are cared for by the Sisters of the Presentation. When necessary the University physician is in daily attendance.

THE GYMNASIUM

adjoins the campus used for outdoor sports. The track-hall is 190 feet long by 120 feet wide. It is kept in excellent condition and is used for indoor track meets, winter baseball practice, basketball, tennis and all manner of running, jumping, pole-vaulting and weight-throwing. The arched roof does away with supporting pillars and affords a free, unobstructed ground room convertible into an immense playground during the rainy season. It holds out to all a convenience for athletics not ordinarily accorded

students in any other educational institution west of the Rockies.

CAMPUS

The outdoor campus consists of five acres of ground north of the Gymnasium. Here are laid out the baseball diamonds, the football gridiron and tennis courts, all of which afford general opportunities for outdoor exercise in agreeable weather. A four-lap track encircles the plot and every convenience is at hand for the successful direction of all outdoor sports. The total stretch of University campus open to the use of the students covers more than twenty-five acres.

SYSTEM OF INSTRUCTION

The entire plan of studies is based on the modified elective system. The student is free to select his own curriculum conformably to his natural liking and to the career in life which he may have in view.

ADMISSION TO COURSES

Candidates for any regular course of studies must present evidence either by examination or by a properly attested certificate of their fitness for the standing they desire. Entrance examinations are held at the University in September at the beginning of the first term and in February at the beginning of the second term. A candidate who fails in one or more subjects may be admitted to the desired class standing conditionally and will be accorded full class standing as soon as he shall have worked off his conditions.

Diplomas will not be conferred on students who have not been in residence at the University for at least one complete school year during the Senior year of study.

Students who do not wish to become candidates for a diploma in any prescribed course may take whatever studies they desire and for which their talents fit them. Special help will be given them by the Faculty to make up for deficiencies and to become, if possible, eligible for a diploma. Special students are subject to the same regulations and discipline as the other students.

CREDIT HOURS

The hours scheduled in the different programs of studies outlined later in this catalogue mean periods of at least forty-five minutes' duration each. The minimum number of credit hours which a student must carry in a four-year program is sixteen; the maximum number which he may carry is twenty. A "credit" is the unit of school work and is defined as any study satisfactorily pursued during five forty-five minute periods a week throughout a school year or from thirty-six to forty weeks' duration. A term or semester is half a school year.

DISCIPLINE

The Faculty maintain that an education which gives little attention to the development of the moral part of a youth's character is pernicious; and that this development is practically impossible where students are granted absolute relaxation from all Faculty government and influence outside the class room. Hence the discipline at Columbia is paternal. The Faculty and students form one big family,

not only meeting in the class room but partaking of the same wholesome fare in a common dining-room, living in the same buildings, enjoying recreation together on the campus and attending Divine services in a body in the chapel. The underlying principle of the school is the combination of secular training with positive religious instruction in a constant religious atmosphere. The institution is strictly Roman Catholic but admits students of other denominations and respects their conscientious beliefs. Catholic students are required to take the prescribed courses in Christian Doctrine.

The following regulations shown by experience to be salutary are enforced at the University:

1. Students are required to report at the University immediately after arriving in Portland at the beginning of the school year as well as at all other times when a leave of absence has been granted. Unnecessary delay in Portland is looked upon as a serious violation of rule.

2. No student shall leave the University grounds without permission from the President or the person delegated to represent him.

3. Leave of absence will not be granted during the term time except in case of urgent necessity.

4. No branch of study shall be taken up or discontinued without the consent of the Director of Studies.

5. Official reports of class standing and conduct will be sent to parents or guardians four times a year—shortly after the examinations as outlined in the College Calendar.

6. Parents of Day Scholars will be informed by telephone or by special report card of repeated tardiness or absence on the part of Day Scholars.

7. Continued violation of regulations leads to forfeiture of rooms.

8. A student will have to withdraw from the University whenever his conduct or his lack of application convinces the authorities that his presence is a detriment to the well-being of the University.

9. In case of suspension or dismissal for violations of discipline no fee shall be returned.

STUDENT ACTIVITIES

ATHLETICS

Students are encouraged to take part in various athletic sports—Football, Soccer, Basketball, Track and Field contests, Baseball, Handball, Tennis, Swimming—and a limited number of contests is arranged with outside organizations. All athletics are governed by a Faculty Board of Control which acts conjointly with the Student Body Association. The Board determines the amateur standing of the athletes and apportions the finances; thus checking indiscreet action of students and guarding against professionalism.

COLUMBIAN ASSEMBLY

The Columbian Assembly is an organization of the students for advancement in public speaking. In form the assembly is a little democracy, electing its own officers for the year, and conducting its own meetings on the dates indicated in the College Calendar. Under the guidance of a Faculty advisor the assembly conducts a competitive elocution contest and an oratorical contest; and holds preliminary contests in preparation for the annual debate with an outside school. Money prizes or medals are awarded the winners in these contests. The assembly works in har-

mony with the various English classes and is but the public expression and practical application of the theory of elocution, oratory, debating and parliamentary law as studied systematically under the Professors of English. The assemblies are enlivened by vocal and instrumental music and encouraged by the presence not only of members of the Faculty but of distinguished visitors who from time to time address the students.

THE COLUMBIAD

The *Columbiad* is a monthly publication edited by the students of the University. The editorial staff is chosen on the basis of merit and works under the supervision of a member of the Faculty from the English Department. The various essays, short stories, poems, editorials, local items, athletic writeups, cartoons and drawings, appearing in the paper represent the best efforts submitted to the English classes and to the Art Department. It would be hard to find a better outlet for literary ability and a more potent incentive to persevering work in the English classes than is afforded by a college paper of high standard, like the *Columbiad.*

ORDINARY EXPENSES

Matriculation Fee (payable on first entrance).....$ 10.00
BOARD, TUITION, Lodging, Washing and Mending of Linens, for entire school year..... 300.00
Tuition and Dinner 135.00
Tuition only (Day Scholars in Collegiate and High School Grades) 75.00
Tuition only (Day Scholars in Grammar Grades).. 60.00

PAYABLE IN ADVANCE, AS FOLLOWS:

On Entrance in September:

Matriculation Fee (payable first year only).....$ 10.00
First Payment on Board and Tuition..... 200.00
Deposit on Book and Stationery Account..... 10.00
Student Athletic Fee 5.00

Also, in this First Payment must be included any extra Expense the student may wish to incur, such as charges for Private room, Special Courses (listed below).

On January 15:

Balance on Board and Tuition $100.00
and any extra expenses the student may have incurred.

No rebate will be allowed for time absent at the opening of the Terms, September and January. The charge of $300.00 covers the tuition fee, which is fixed at $75.00 per Scholastic Year. The latter sum is accepted as an entirety for tuition during the Scholastic Year, and will not be refunded in whole or in part, unless it becomes expedient for a student to go to his home because of severe or protracted illness. *Degrees will not be conferred on any student whose account with the University has not been settled.*

SPECIAL EXPENSES—PAYABLE IN ADVANCE:

For Entire School Year.

Private Rooms (according to location).....$90.00 up
Instrumental Music—Lessons on Piano and use of Instrument $60.00
Use of Piano for Advanced Students..... 30.00
Typewriting—Full Course (20 lessons) 5.00
Use of typewriter..... 10.00
Lessons on Violin, Guitar, Flute, Cornet, Clarinet or Mandolin 50.00
Use of each Instrument..... 5.00
Vocal Culture 40.00
Elocution—Special Course..... 10.00
Use of Library 2.00
"Columbiad"—College Paper 1.00

LABORATORY FEES

Elementary Botany $2.50
Elementary Zoology 2.50
Elementary Chemistry 5.00
Elementary Physics 5.00

GRADUATION FEE

College Course $10.00
High School Course..... 5.00

REMARKS

The Entrance Fees, cost of Books, Music and Laboratory Fees, etc., are required with first payment.

Remittance should be made by draft, postoffice money order or express, payable to the order of the President.

Checks on local banks are not desirable, and exchange will be charged in all cases.

Term bills and other accounts are subject to sight draft if not paid within ten days after they have been rendered.

The University is closed during the months of July and August.

COLLEGE COURSES

DEPARTMENT OF CLASSICS

DEPARTMENT OF LETTERS

DEPARTMENT OF HISTORY AND ECONOMICS

DEPARTMENT OF CIVIL ENGINEERING

TWO-YEAR PRE-MEDICAL COURSE

BACHELORS' DEGREES

The courses of study for the Degree of Bachelor extend by fixed program through four scholastic years.

In the Department of Arts and Letters one of three degrees is conferred—Bachelor of Arts (A. B.), Bachelor of Letters (Litt. B.), Bachelor of Philosophy (Ph. B.)—dependent on the special program of studies selected.

In the Department of Engineering one degree is conferred—Bachelor of Science in Civil Engineering (B. S. in C. E.)

ENTRANCE REQUIREMENTS FOR ARTS AND LETTERS

ENGLISH. Part of the examination time is given for answering questions upon books required to be read in the preparatory courses in English; the remainder, for writing an essay.

LATIN. Grammar, complete; *Caesar,* four books of the Gallic War; *Cicero,* four orations against Catiline; *Vergil, Aeneid,* six books; translation at sight of passages from *Cicero* and *Caesar;* translation of English into Latin based on the text of the authors.

GREEK. *(For Students in the Department of Classics only)* Grammar, etymology, and general rules of syntax; *Xenophon, Anabasis,* four books; *Homer,* at least three books; prose composition based on text.

HISTORY. A general knowledge of the outlines of Greek and Roman History and of Medieval and Modern History, as set out in the texts used in high schools and other secondary schools.

CIVIL GOVERNMENT. The Constitution of the United States; Federal Government and State Government.

ALGEBRA. The whole subject as far as logarithms, as given in *Wentworth's College Algebra,* or an equivalent in the larger treatises of other authors.

GEOMETRY. Plane and Solid, including the solution of simple original problems and numerical examples as given in the works of *Wentworth, Chauvenet, Newcomb,* or an equivalent in treatises by other authors.

PHYSICAL GEOGRAPHY. As given in *Tarr's* text-book or an equivalent treatise.

ZOOLOGY. Elementary.

PHYSIOLOGY. *Martin's Human Body,* or an equivalent text.

BOTANY. Elementary.

CHEMISTRY. Elements of inorganic chemistry. The preparation in this subject must include a course of lectures and recitations, and laboratory work in which at least fifty experiments have been exemplified.

PHYSICS. Elementary. The preparation in this subject should include a course of lectures illustrated by experiments, and recitations from a text-book similar to *Carhart and Chute's, Gage's* or *Millikan and Gale's.* Laboratory work is required. Applicants may present either chemistry or physics provided either subject has occupied one whole year with five recitations a week.

FRENCH AND GERMAN. A three years' study of either German or French and one year of French or German is

required for entrance on the Program in Letters and the Program in History in Economics. Students who began French in the second preparatory year must have taken up German in the fourth preparatory year and shall continue it for two years in the College Course. A like regulation holds for those who began German in the second preparatory year. Applicants for the Program of Classics present a year of French or German.

The entrance examination requires sight translation of ordinary German or French prose: an ability to translate, rather than accurate grammatical knowledge is expected.

ENTRANCE REQUIREMENTS FOR CIVIL ENGINEERING

ALGEBRA. Through Quadratics.
GEOMETRY. Plane and Solid.
TRIGONOMETRY. Plane and Spherical.
ENGLISH. Four years.
SCIENCE. Physics and Chemistry.
FOREIGN LANGUAGE. Three years.
MECHANICAL DRAWING. One year.
HISTORY. Two years.

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF ARTS

FRESHMAN YEAR

SUBJECTS First Semester	Hrs. a Week	See for Description Page	Course	SUBJECTS SecondSemester	Hrs. a Week	See for Description Page	Course
Latin	4	44	I	Latin	4	44	II
Greek	4	39	I	Greek	4	40	II
English	3	36	I	English	3	36	I
History	4	42	I	History	4	42	I
Elocution	1	34	III	Elocution	1	34	IV
Elocution	1	16	VIII	Elocution	1	16	VIII

SOPHOMORE YEAR

Latin	4	44	III	Latin	4	45	IV
Greek	4	40	III	Greek	4	40	IV
Philosophy	4	49	I	Philosophy	4	49	I
English	3	36	II	English	3	36	II
Elocution	1	16	VIII	Elocution	1	16	VIII

JUNIOR YEAR

Latin	4	45	V	Latin	4	45	VI
Greek	4	40	V	Greek	4	41	VI
Philosophy	4	49	II	Philosophy	4	49	II
English	3	37	III	English	3	37	III
Elocution	1	16	VIII	Elocution	1	16	VIII

SENIOR YEAR

Latin	4	46	VII	Latin	4	46	VIII
Greek	4	41	VII	Greek	4	42	VIII
Philosophy	4	50	III	Philosophy	4	50	III
English	3	37	IV	English	3	37	IV
Elocution	1	35	VI	Elocution	1	35	VII

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF LETTERS

FRESHMAN YEAR

SUBJECTS First Semester	Hrs. a Week	See for Description Page	Course	SUBJECTS SecondSemester	Hrs. a Week	Sec for Description Page	Course
English	3	36	I	English	3	36	I
Latin or	4	44	I	Latin or	4	44	II
Elective	5			Elective	5		
French or	5	38	II	French or	5	38	II
German	5	39	II	German	5	39	II
History	4	42	I	History	4	42	I
Elocution	1	34	III	Elocution	1	34	IV
Elocution	1	16	VIII	Elocution	1	16	VIII

SOPHOMORE YEAR

English	3	36	II	English	3	36	II
Philosophy	4	49	I	Philosophy	4	49	I
Latin or	4	44	III	Latin or	4	45	IV
Elective	5			Elective	5		
French or	4	38	III	French or	4	38	III
German	4	39	III	German	4	39	III
History	3	43	IIa	History	3	43	IIa
Elocution	1	16	VIII	Elocution	1	16	VIII

JUNIOR YEAR

English	3	37	III	English	3	37	III
Latin or	3	45	V	Latin or	4	45	VI
Elective	5			Elective	5		
Philosophy	4	49	II	Philosophy	4	49	II
History	4	43	III	History	4	43	III
Elocution	1	16	VIII	Elocution	1	16	VIII

SENIOR YEAR

English	3	37	IV	English	3	37	IV
Latin or	4	46	VII	Latin or	4	46	VIII
Elective	5			Elective	5		
Philosophy	4	50	III	Philosophy	4	50	III
Elective	4			Elective	4		
Elocution	1	35	VI	Elocution	1	35	VII

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF PHILOSOPHY

FRESHMAN YEAR

SUBJECTS First Semester	Hrs. a Week	See for Description Page	Course	SUBJECTS Second Semester	Hrs. a Week	See for Description Page	Course
History	4	42	I	History	4	42	I
English	3	36	I	English	3	36	I
French or	5	38	II	French or	5	38	II
German	5	39	II	German	5	39	II
Political Science	4	50	I	Political Science	4	50	I
Elocution	1	34	III	Elocution	1	34	IV
Elocution	1	16	VIII	Elocution	1	16	VIII

SOPHOMORE YEAR

History	3	43	IIa	History	3	43	IIa
Political Science	4	51	II	Political Science	4	51	IIIa
Philosophy	4	49	I	Philosophy	4	49	I
English	3	36	II	English	3	36	II
German or	4	39	III	German or	4	39	III
French	4	38	III	French	4	38	III
Elocution	1	16	VIII	Elocution	1	16	VIII

JUNIOR YEAR

History	4	43	IIb	History	4	43	IVa
Political Science	4	51	IIIb	Political Science	4	51	IV
Philosophy	4	49	II	Philosophy	4	49	II
History	4	43	III	History	4	43	III
Elocution	1	16	VIII	Elocution	1	16	VIII

SENIOR YEAR

History	3	44	IVb	History	3	44	IVb
Political Science	6	51	V, VI VII	Political Science	6	52	VI, VII, VIII
Philosophy	4	50	III	Philosophy	4	50	III
English	3	37	III	English	3	37	III
Elocution	1	35	VI	Elocution	1	35	VII

STUDIES PRESCRIBED FOR THE DEGREE OF BACHELOR OF SCIENCE IN CIVIL ENGINEERING

FRESHMAN YEAR

SUBJECTS First Semester	Hrs. a Week	See for Description Page	Course	SUBJECTS SecondSemester	Hrs. a Week	See for Description Page	Course
Algebra	5	47	I	Anal. Geom	5	47	II
English	4	36	I	English	4	36	I
French or German	5	38 39	III	French or German	5	38 39	III
Chemistry	4	54	I	Chemistry	4	54	I
Drawing	3	33	I	Drawing	3	33	II

SOPHOMORE YEAR

Calculus	5	47	III	Calculus	5	48	IV
Des. Geom.	3	58	I	Des. Geom.	3	58	I
Surveying	5	58	II	R.R.Surv'g	5	59	IV
Geodesy		59	III				
Physics	5	55	I	Physics	5	55	I
Drawing	2	33	III	Drawing	2	33	IV

JUNIOR YEAR

Anal.Mechs.	5	60	V	Anal.Mech.	2	60	V
Minerology	2	61	VIII	Mech. of Materials	3	60	VI
Stereotomy	2	62	X	Geology	4	61	VII
Astronomy	3	62	IX	RoadEng'g	3	63	XII
Philosophy	4	49	I	Philosophy	4	49	II
Political Science	4	50	I	History	4	43	

SENIOR YEAR

Theroy of EarthPres. Arches, Masonry Construct'n	5	63	XIII	Theory of EarthPres. Arches, Masonry Construc'n	5	63	XIII
Hydraulics	3	65	XVI	Hydraulics	3		000
Bridge Analysis	5	64	XIV	Grap.Stats. Bridge Design	5	00 64	XV
Sewerage	2	65	XVII	Sewerage	2	65	XI
				Engineer'g Contracts	2	66	XVII
				Specificat's Thesis		66	

TWO-YEAR COURSE PREPARATORY TO MEDICINE

FRESHMAN YEAR

SUBJECTS First Semester	Hrs. a Week	See for Description Page	Course	SUBJECTS SecondSemester	Hrs. a Week	See for Description Page	Course
Zoology	5	57	I	Zoology	5	57	I
Chemistry	4	54	I	Chemistry	4	54	I
Drawing	1	33		Drawing	1	33	
English	3	36	I	English	3	36	I
Bacteriol'gy	5	53	I	Physiology	5	56	I
Microscopy		54	I				

SOPHOMORE YEAR

Botany	5	52	I	Botany	5	52	I
Physics	5	55	I	Physics	5	55	I
Chemistry	4	54	II	Chemistry	4	54	II
Pol. Science	4	50	I	History	4	43	

NOTE: Latin or a Modern Language must be taken if student has not sufficent language credits.

DETAILED DESCRIPTION

OF

COLLEGE STUDIES

CHRISTIAN DOCTRINE

FIRST YEAR

MORAL. The Articles of the Creed. The General Principles of Morality. Virtue and Sin. The Commandments of God. Text-book, *Manual of Christian Doctrine.*

SECOND YEAR

MORAL. The Commandments of the Church. The Evangelical Counsels and Beatitudes. Worship and Means of Sanctification—Grace, Prayer, the Sacraments, Liturgy. Text-book, *Manual of Christian Doctrine.*

THIRD YEAR

DOGMA. Revealed Religion. Pre-Christian Revelation. The Christian Revelation. The Catholic Church. God Considered in Himself. Text-book, *Wilmer's Handbook of the Christian Religion.*

FOURTH YEAR

DOGMA. God the Creator. God the Redeemer. Sanctification. Grace. The Sacraments. The Church as a Means of Salvation. Text-book, *Wilmer's Handbook of the Christian Religion.*

DRAWING, ARTISTIC

In this department the aim is to lay a thorough foundation in drawing for those who wish to make Art a profession, but the courses are so arranged as to be accessible to other students. The system of teaching, which is that followed in the best art schools, is intended to develop the individuality of each student, so that with a good under-

standing of the principles of art, he may interpret nature according to his own temperament.

The work is done altogether from cast, object and nature. The immediate surroundings of the University buildings, the mountains and the Willamette River offer many beautiful subjects for the study of landscapes.

ELEMENTARY CLASS

(a) Drawing from casts of ornaments purely geometrical, such as moldings, ovoloes, dentils, etc. Sketching from simple objects.

(b) Drawing from casts of ornaments of which the elements are living forms, such as ornamental leaves and flowers. Sketching from nature, leaves and flowers.

(c) Drawing from architectural elements, such as pedestals, bases, shafts, cornices, etc. Lectures on perspective, direction of the principal lines in relation to the horizon. Elementary notions of the five orders of architecture.

(d) Drawing from casts of the human figure; hands, feet, masks, etc. Architectural ornaments. Sketching from familiar objects.

CLASS OF DECORATIVE DESIGN

The object of this department is to prepare students for professional work in decorative designings of all kinds. They will take up the study of historical ornaments and will be taught the several principles of the arrangement of designs, and from personal sketches of plants and flowers will be shown the art of making original designs for wall paper, book covers, stained glass, carpets, interior decorations, metal plates, etc. No particular program is given out, as the teaching is purely individual.

DRAWING, MECHANICAL

Drawing A and B (see Page 77) are required to take up drawing I, II.

Two hours of actual time in drawing are required for each credit hour in the schedule.

I.

FREEHAND. This course consists in sketching with pencil from various models of the different machine parts. Later in the term, the use of instruments is taken up illustrating problems in the Engineering course.

[Three hours a week for one term.]

II.

PROJECTION DRAWING. The course embraces the principles of projection, methods of shop-drawing, tinting, tracing, blueprinting, lineshading and the preparation of working drawings of complete machines. This course must be preceded by Course I.

[Three hours a week for one term.]

III.

DESCRIPTIVE GEOMETRY. A series of accurate plates is made, illustrating the principles or orthographic and spherical projections, shades and shadows, perspective and isometric projections.

[Two hours a week for two terms.]

IV.

KINEMATIC DRAWING. Designing of cams and gear teeth, complete working drawings of machines involving

the application of kinematics and the computation of dimensions.

[Two hours a week for two terms.]

V.

TOPOGRAPHY. Pen and colored topographical drawing, conventional signs, map drawing from notes taken from surveys. This course must preceded by Course I.

ELOCUTION AND ORATORY

I.

READINGS AND DECLAMATIONS. This course is designed to correct defects in pronunciation and emphasis. Each student is required to give two declamations.

[One hour a week for one semester.]

II.

READINGS AND DECLAMATIONS. Continuation of Course I. Each student is required to give three declamations.

[One hour a week for one semester.]

III.

PRACTICAL ELOCUTION. Exercises in breathing, voice culture, and action. The principles of pronunciation and emphasis and their application in the reading of selections. Text-book, *Fulton and Trueblood's Practical Elocution.*

[One hour a week for one semester.]

IV.

PRACTICAL ELOCUTION. Further exercises in breathing, voice culture, action. Quality, force, pitch and time.

Minute speeches and declamations. Lectures on the principles of action. Text-book, *Fulton and Trueblood's Practical Elocution.*

[One hour a week for one semester.]

V.

Oral Discussions. The application of formal logic to debating. Analysis of selected argumentative speeches, and the preparation of briefs. Courses III. and IV. and a course in logic are required for admission to this course. Sections are limited to twenty-four students.

[One hour a week for one semester.]

VI.

Shakesperian Reading. The critical and artistic reading of two of Shakespere's plays accompanied with stage action. The students present the play by scenes before the class. Courses III. and IV. are required for admission to this course. Sections are limited to twenty-four students. This course alternates with Course VII., described below.

[One hour a week for one semester.]

VII.

Oratory. A study of the great orators of ancient and modern times. Each student is required to write and deliver a biographical oration on one of the great orators. Lectures on methods of public address. Courses III. and IV. above, and Course I. in English are required for admission to this course. Sections are limited to twenty-four students. This course alternates with Course VI., described above.

[One hour a week for one semester.]

ENGLISH

I.

(a) Prose Forms. Special treatment of Exposition and Argumentation. *Genung's Working Principles of Rhetoric, Part II.* Frequent practice in writing essays.

[Two hours a week for one semester.]

(b) *Heydrick's How to Study Literature,* with practical exercises in analysis of literary forms.

[One hour a week for one semester.]

(c) Literature. *Higginson and Boynton's.* In this course the student acquires a good knowledge of the contents of American literature. The biography of men of letters is also a part of this course.

[One hour a week for two semesters.]

(d) Lyric Poetry. The technique is carefully laid down and choice specimens of lyric poetry are read critically in class. There is much required reading and writing.

[One hour a week for one semester.]

II.

(a) Prose Forms. Special study of the Novel and the Short Story. The development of the novel is carefully studied, and its kinship with other forms of narrative is pointed out. Frequent practice in writing.

[Two hours a week for one semester.]

(b) Literature. The development of English literature is studied, minute attention being given to great periods.

[One hour a week for two semesters.]

(c) The Sonnet. Technique and analysis of famous sonnets.

[One hour a week for one semester.]

III.

(a) Prose Forms. Intensive study of the Essay and the Oration. Each student in this course is required to read the great essays and orations in English literature. He must produce four essays and two orations during the term.

[Two hours a week for one semester.]

(b) Literature. Recent English and American Poetry. This course deals not only with the best work done in recent volumes of collected verse, but also takes account of the best fugitive pieces in the magazines.

[Two hours a week for one semester.]

(c) Didactic Poetry and Satire. This course involves reading chiefly.

[One hour a week for two semesters.]

IV.

(a) The Laws of the Epic and the Drama. *Ker's* treatise on the Epic, with required readings in narrative poetry. *Freytag's Technique of the Drama,* with supplementary notes.

[Two hours a week for one semester.]

(b) Shakespere. Reading and Analysis of Plays.

[Two hours a week for one semester.]

(c) The Leading Poets of the Nineteenth Century. Analytical study and required reading.

[One hour a week for two semesters.]

FRENCH

I.

Grammar with written and oral exercises; the inflection of nouns and adjectives, the use of all the pronouns, the

conjugation of regular and the common irregular verbs; the correct use of moods and tenses, the essentials of French syntax, and the common idiomatic phrases. *Frazer and Squair's Grammar.* Reading three of the following: *La Tache du Petit Pierre, Mairet; Un Cas de Conscience, Gervais; La Main Malheureuse, Guerber; Sans Famille, Malot; Super's Readings from French History.*

[Five hours a week for two semesters.]

II.

Advanced grammar and composition, study of idioms, memorizing. *Frazer and Squair's Grammar.* Dictations and conversations are added on practical topics, and careful translation made of five of the following works: *Le Voyage de M. Perrichon, Labiche; Roman d'un Jeune Homme Pauvre, Feuillet; Fables choises, La Fontaine; Le Medecin Malgre Lui, Moliere; Le Cid, Corneille; Esther, Racine; Pages oubliees de Chateaubriand; La Question d'Argent, Dumas; Standard French Authors, Guerlac.*

[Five hours a week for two semesters.]

III.

The study of this course is devoted chiefly to the prose and poetry of the nineteenth century and includes composition, conversation, history and general view of French literature. Besides a reading and criticism of the best writers, such as: *Causieres du Lundi, Ste. Beuve; On Rend l'Argent, Coppee; Hernani; Hugo; Meditations, Lamartine; Athalie, Racine; L'Avare, Moliere; Mlle. de la Seigliere, Sandeau; Les Origines de la France Contemporaine, Taine; Expedition de Bonaparte en Egypte, Thier; Ste. Elizabeth de Hongri, Montalembert; Historie de la Litterature Francaise, Duval.*

[Five hours a week for two semesters.]

N. B.—The works studied are not necessarily the same every year.

GERMAN

I.

Grammar, *Thomas,* Part I. Translation from German into English of simple prose; translation of English exercises into German. Reading of short stories and selections from more difficult prose.

German Reader, *Thomas and Hervey.*

[Five hours a week for two semesters.]

II.

Grammar, *Thomas,* Part II. Translation into German of narrative prose and selections from history. Sight reading of selections from history.

Herman and Dorethea, *Goethe;* Lichtenstein, *Hauff.*

[Five hours a week for two semesters.]

III.

Grammar, *Thomas,* Part III. Sight reading of plays, poems and prose writing. Translation of selections from history and literature; original essays.

Minna von Barnhelm, *Lessing;* best known poems, *Heine;* Correspondence, *Schiller-Goethe.*

[Four hours a week for two semesters.]

GREEK

I.

Lysias. Orations selected. Short history of the Attic orators.

HOMER. Odyssey.
Prose Composition based on Lysias.
Epitome of the New Testament: Parts IV., V., *Stoffel.*
[Four hours a week for one semester.]

II.

LYSIAS. Orations selected.
HOMER. Odyssey.
Prose Composition based on Lysias.
ST. JOHN CHRYSOSTOM. Eutropius.
[Four hours a week for one semester.]

III.

HERODOTUS. Selections. Study of Herodotus dialect.
Advanced Greek Prose Composition.
ST. BASIL. De Profanis Scriptoribus.
[Four hours a week for one semester.]

IV.

HERODOTUS. Selections.
Selections from the Greek Lyric Poets.
Advanced Greek Prose Composition.
ST. GREGORY. Machabees.
[Four hours a week for one semester.]

V.

DEMOSTHENES. The Speech on the Crown, or the Olynthiacs and the Philippics. Review of the political situation at Athens and events bearing upon the orations.

THUCYDIDES. Book I. Greece before the Peloponnesian War. Importance of this war in Greek history. The speeches will form the subjects for special class inter-

pretations. Stylistic differences between pure Attic and archaic Attic will be pointed out.

During this course special attention will be given to textual and exegetical criticism, practically shown by passages selected for that purpose. This is done in the belief that it is the best way to make students appreciate the notes in school editions of classical authors.

Practical Exercises. Embodying idiomatic expressions of the authors read.

[Four hours a week for one semester.]

VI.

Aeschylus. One play to vary each year. In connection with it will be discussed the origin of the drama, the part of the chorus in the early tragedy and the religious tenets of Aeschylus. The structure of a Greek tragedy, the iambic trimeter and the lyric meters will be sufficiently explained so as to be properly appreciated by the students. Incidentally also the Greek festivals, at which the plays were staged, and the Dionysiac theater will be discussed.

Sophocles. Oedipus Tyrannus and Antigone. Digest of the Theban legends. Religious views of Sophocles compared with those of Aeschylus.

Elements of Greek Literature. Students shall use *Jebb's Primer of Greek Literature.*

[Four hours a week for one semester.]

VII.

Euripides. One play, to vary each year. Religious tendencies of Euripides. His style as compared with that of Aeschylus and Sophocles. Dramatic art, and his right to the title of "Scenic Philosopher."

ARISTOPHANES. One play, selected from the following list: The Acharnians, the Knights, the Frogs, the Clouds, the Birds, or the Wasps. In connection with the reading of these plays will be treated the Greek comedy—its origin, nature, and aim. Aristophanes, the great burlesque critic of Athenian life and manners. The structure of a comedy compared with that of a tragedy.

PRACTICAL EXERCISES in Greek composition.

[Four hours a week for one semester.]

VIII.

PINDAR. Selected Odes, in connection with which the public games will be studied. *Elective.*

GREEK FATHERS. St. Basil. The Martyr Gordius. St. John Chrysostom. The Return of Bishop Flavian. St. Gregory Nazianzen. Funeral Oration of Cæsarius. *Elective.*

PLATO. Apology and Crito. Socrates—his friends and enemies. Athenian court proceedings.

[Four hours a week for one semester.]

HISTORY

ANCIENT HISTORY

I.

(a) ANCIENT GREECE to the conquest by Rome of the Hellenic world. Readings and examinations on required texts. This course is given in alternate years with Course I *(b)*.

[Four hours a week for two semesters.]

(b) ANCIENT ROME to the barbarian invasions. Readings, and examinations of required texts. This course is given in alternate years with Course I. *(a)*.

In both courses the student is required to become familiar with the institutions of the ancient world, and to study the same in *De Coulanges' The Ancient City.*

[Four hours a week for two semesters.]

MEDIEVAL AND MODERN HISTORY

II.

(a) The History of the Middle Ages from the invasion of the barbarians, and the history of the periods of the Renaissance and the Reformation of 1603. Readings, and examinations on required texts.

[Three hours a week for two semesters.]

(b) The General History of Europe from the beginning of the seventeenth century to the present time. Readings, and examination on required texts.

[Four hours a week for one semester.]

III.

The History of the British Isles to the Revolution in 1689. For the narrative *Gardiner's Students' History* is used as a text and is supplemented by lectures. In the study of the development of political institutions *Feilden's Constitutional History* is used. In addition, students shall make free use of the library in preparing special topics upon which they shall report orally in class.

[Four hours a week for two semesters.]

AMERICAN HISTORY

IV.

(a) American History from its Beginning to 1763. A large part of the work of this and the following course consists in the preparation and presentation in class of

special topics by the students. An effort will be made to train the student in the use of original sources as well as in the discriminating use of secondary works. Weekly written tests are given upon the lectures and the assigned collateral reading.

[Four hours a week for one semester.]

(b) American History from 1763 to the Present Time. Treatment as in *(a)* above. Also a book review, a bibliographical report and a biographical essay by each student.

[Three hours a week for two semesters.]

LATIN

I.

Livy. Book XXI. Study of Livy's grammar and style.

Cicero. Epistles selected.

Prose Composition. Frequent practice in writing.

[Four hours a week for one semester.]

II.

Livy. Book XXII.

Cicero. De Senectute and De Amicitia.

Pliny. Epistles selected.

Prose Composition. Frequent writing of continuous prose.

[Four hours a week for one semester.]

III.

Cicero. De Oratore. Book I.

Horace. Odes and Epodes. Study of metrical systems; peculiarities of styles; plan of composition; comparison with Odes of a similar nature.

ADVANCED PROSE COMPOSITION. Frequent practice in writing.

[Four hours a week for one semester.]

IV.

TACITUS. Dialogus De Oratoribus.

HORACE. Odes and Epodes; or, Satires selected. See Course III.

TERENCE. Phormio. Short history of Greek and Roman comedy.

ADVANCED PROSE COMPOSITION. Frequent practice in writing.

[Four hours a week for one semester.]

V.

LIVY. Roman History, First Book. In the reading of the text particular attention is called to the rules of syntax —roots and derivation of words—and the ancient history, geography and mythology.

LATIN COMPOSITION twice a week, either paraphrases or original. Short fables and stories.

HORACE. Epistula ad Pisones translated, analyzed and criticised from a philological and literary standpoint.

ANCIENT LITERATURE. Historians and Lyric Poets: their lives, their works, their genius.

[Four hours a week for one semester.]

VI.

TACITUS. Agricola and Germania. While reading the text a comparison is made with the private and public manners of modern nations.

TERENCE. Andria. Sight reading.

HORACE. The Literary Epistles.

Weekly practice in written composition, Latin conversation and versification.

ANCIENT LITERATURE. Dramatists of Greece and Rome compared and discussed.

[Four hours a week for one semester.]

VII.

QUINTILIAN. De Institutione Oratoria, Books Tenth and Twelfth. Translation. The explanation embraces a literary criticism of Grecian and Roman orators, and practical remarks on Latin idioms and the fine arts of antiquity.

Short orations or dissertations, and practical conversations take place weekly.

PLAUTUS. Captivi. The study of the play gives a full knowledge of the characters, the plot, the style, the archaic forms and the construction peculiar to the author.

ANCIENT LITERATURE. Orators, especially Demosthenes and Cicero.

[Four hours a week for one semester.]

VIII.

CICERO. De Officiis. Partly sight reading. Besides the study of the work from a philological standpoint, the student is made acquainted with the main systems of Grecian philosophy, and continual reference is made to Course III. in philosophy.

Oratorical and philosophical compositions alternate weekly. Latin conversations on general topics.

LUCRETIUS. De Rerum Natura. Select passages. Synopsis of the poem. Statement and refutation of erroneous philosophical systems of antiquity. Analogy with the errors of our day. Style of the writer.

ANCIENT LITERATURE. Philosophers, particularly Socrates, Plato, Aristotle, Cicero and Seneca.

[Four hours a week for one semester.]

MATHEMATICS

I.

ALGEBRA. This course includes a study of the binomial theorem, the theory of logarithms, choice, chance, variables and limits, series, determinants. Then follows a thorough study of the general properties and solution of equations, embracing the subjects of derivatives, transformation, detached coefficients, surd and imaginary roots, incommensurable roots, limits of roots, biquadratic equations, DesCartes' and Cardan's rules; Sturm's theorem, Horner's method.

[Five hours a week for one term.]

II.

ANALYTIC GEOMETRY. This course includes a study of the point and right line; conic sections; their equations and properties; discussion of the general equation of the second degree containing two variables; different systems of co-ordinates; transformation of co-ordinates; an elementary course in geometry of three dimensions, embracing the point, straight line, plane and surfaces of revolution; transformation of co-ordinates; quadric surfaces and supplementary propositions.

[Five hours a week for one term.]

III.

CALCULUS, DIFFERENTIAL. This course as also Courses IV. and V. is designed to meet the requirements of Engi-

neering students. It includes a study of the methods for the differentiation of algebraic, logarithmic and exponential, trigonometric, and inverse trigonometric functions, successive differentiation, and differential coefficients; treatment of implicit and compound functions; expansion of functions; indeterminate forms; partial differential coefficients of the first order and of higher orders; direction of curvature; radius of curvature; envelopes; maxima and minima of functions of one independent variable, and of several independent variables; tracing curves; differentials of arcs, plane areas, surfaces and volumes of revolution.

[Five hours a week for one term.]

IV.

Calculus, Integral. Integration of elementary form and of rational fractions; integration by rationalization and by parts; successive integration; multiple intregals; definite intregals, limits of intregation; double intregation applied to plane areas; rectification of plane curves; quadratures of plane areas and surfaces of revolution; surface and volume of any solid; intrinsic equation of a curve. This course is supplemented by numerous exercises and examples.

[Four hours a week for one term.]

V.

Differential Equations. An elementary course for Engineering students, supplementary to the course of integral calculus. It embraces equations of the first order and first degree: equations of the first order, but not of the first degree; singular solutions; linear equations with constant coefficients; special forms of equations with

higher orders. Numerous applications to mechanics and physics are introduced during the course.

[One hour a week for one term.]

PHILOSOPHY

I.

(a) PHYSIOLOGICAL PSYCHOLOGY. This course is a fairly comprehensive treatment of the physical basis of consciousness.

(b) EXPERIMENTAL AND DESCRIPTIVE PSYCHOLOGY. The primary laws of consciousness; psycho-physical methods and results.

(c) RATIONAL PSYCHOLOGY. The problems of the mind. Nature, origin and destiny of the soul.

[Courses *a, b* and *c* are consecutive. Lectures three hours a week for two semesters.]

(d) LABORATORY EXERCISES. Experiments will be conducted with special reference to their value as aids to introspection. *Sanford's Manual of Experimental Psychology, Fitchner's Experimental Psychology, Vol. I.*

[One hour a week for two semesters.]

II.

(a) ELEMENTS OF EPISTEMOLOGY. A study of the Scholastic theory of knowledge in relation to the teachings of Descartes, Leibnitz, Locke, Berkeley, Hume, Kant and Spencer.

(This course is intended to be introductory to Logic and General Metaphysics and will be given at the beginning of the year during the time prescribed for these studies.)

(b) LOGIC. *Elements of Logic,* by *Turner.*

[Two hours a week for two semesters.]

(c) General Metaphysics. Transcendental concepts; their value in different systems of philosophy.

[Two hours a week for one semester.]

(d) Cosmology. The fundamental concepts of the natural sciences in relation to Thomistic philosophy.

[One hour a week for one semester.]

(e) Theodicy. The existence of God; His attributes; His presence in the universe.

[One hour a week for one semester.]

(f) Student Discussions. From time to time throughout the year students will be required to read and discuss papers on various subjects in the field of philosophic inquiry.

III.

(a) Ethics. The theory of morals, with special reference to practical problems.

[Four hours a week for one semester.]

(b) Outlines of the History of Philosophy. *Turner's History of Philosophy.*

[Four hours a week for one semester.]

POLITICAL SCIENCE

ECONOMICS

I.

The Elements of Economics. A general survey of the subject based upon the study and discussion of *Seager's Introduction to Economics.*

[Four hours a week for two semesters.]

II.

INDUSTRIAL HISTORY AND THE HISTORY OF ECONOMIC THOUGHT. Studies in the *Evolution of Industrial Society* by *Ely*, and in a *History of Political Economy* by *Ingram*.

[Four hours a week for one semester.]

III.

(a) MONEY, CREDIT AND BANKING, with special treatment of the monetary experiences of the United States. The text-book used is *Money and Banking* by *White*.

[Four hours a week for one semester.]

(b) PUBLIC FINANCE. History of finance, expenditure, revenue and debt of States, with special reference to American experience. Lectures and text.

[Four hours a week for one semester.]

IV.

DISTRIBUTION. Rent, interest, wages, profits. Special studies in land and labor problems and Socialism. The text-book used is *The Distribution of Wealth* by *Carver*, for readings *Labor Problems* by *Adams and Sumner*, *Progress and Poverty* by *George*, *Collectivism* by *Vandervelde*, *Contemporary Socialism* by *Rae*, and others.

[Four hours a week for one semester.]

POLITICS

V.

THE ELEMENTS OF POLITICS. General survey. Text, *First Principles in Politics, Lilly*.

[Two hours a week for one semester.]

VI.

American Government and Politics. Text, *Actual Government, Hart.*

[Two hours a week for one semester.]

VII.

Jurisprudence. A course covering (a) the outlines of the Science of Law. (b) The elements of International Law. (c) Lectures on selected topics of Roman and Canon Law. Lectures, readings, and examinations, on required texts.

[Two hours a week for two semesters.]

SOCIOLOGY

VIII.

The Elements of Sociology. Text, *Elements of Sociology, Giddings.*

[Four hours a week for one semester.]

SCIENCE

BOTANY

I.

Botany. Lectures and recitations on the morphology of the root, stem, leaf, flower, fruit and seed; the development of the embryo and the processes of pollination and fertilization; the study of the vegetable cell, of its products, of cell formation, of plant tissues and the various physiological phenomena; the structure, growth, reproduction and general classification of the algae, fungi, lichens, mosses, ferns, and the higher plants.

[Four hours a week for two terms.]

II.

Botanical Laboratory. Supplementary to Course I. Special microscopical study of thallophyta, bryophyta, pteridophyta and spermaphyta referred to in Course I. Drawings must be made of all plants examined. Plants under these headings are collected and put before the student that he may become familiar with their morphology, structure and classification. The course is to accompany or to be preceded by Course I. Provision is also made in this course for students in pharmacy to take a special laboratory course in pharmaceutical botany. Study of the determination and classification of the simpler plants. The analysis of the phanerogams occupies the time during the spring months and the student is made familiar with the habitat and characteristics of the local flora.

[One laboratory hour a week for two terms.]

BACTERIOLOGY

Lectures and Laboratory Work. Lectures on the form, structure, reproduction and classification of bacteria. The relations of bacteria to disease, etc. The principles of sterilization, thermal and chemical, are pointed out. The early part of the laboratory work is occupied in the preparation of the various culture media and in studying pure cultures of certain non-pathogenic bacteria in these media. Observations on the microscopic characteristics of bacteria and special attention to the miscroscopic technique in bacteriological work. Later on in the course some time is devoted to practice in the isolation and identification of pathogenic germs by the various staining processes. Inoculation of animals. Bacteriological investigations of water, air and soil.

[Five hours a week for one term.]

CHEMISTRY

I.

(a) Advanced Inorganic Chemistry. Lectures and recitations. A complete study of the elements and their most important compounds, following the classification based on Mendeléeff's Law, and including a discussion of the theories of the science.

[Two hours a week for two terms.]

(b) Experimental Chemistry. A Laboratory course to accompany Course III., the work consisting of the preparation by the student of the elements and their more typical compounds, determination of molecular weights, verification of the fundamental laws of chemistry, etc. During the latter part of the course, there is taken up the study of the reactions involved in the separation and detection of the more common inorganic bases and acids, the analysis of salts, mixtures of salts, and the complex substances, such as earths, ores, ashes, etc.

[Two to three hours a week for two terms.]

II.

Qualitative Analysis. A course arranged for the students in Pharmacy, comprising a study of the commoner metals and acids, their reactions and separation.

[Four hours a week for two terms.]

MICROSCOPY

I.

Microscopy. Lectures and laboratory work. Refraction and dispersion of light and illumination. The index of refraction in different media. Different shapes of lenses.

Spherical and chromatic aberration. The selection and care of a good microscope. The use of accessories for advanced work; immersion and adjustable objectives, camera lucida, sub-stage condenser, polarizer, micrometers, etc. Special work in photo-micrography. Given in connection with Bacteriology.

PHYSICS

I.

General Physics. An extended treatment of subjects. Mathematical principles are applied to physical phenomena. Special attention is paid to accuracy in the mathematical work and in the statements of the principles involved. Lectures and recitations.

[Three hours a week for two terms.]

II.

(a) Laboratory. The application of mathematics in physical work. Measurements of length, mass and time. Work in mechanics, heat, light, sound, electricity and magnetism. The work is done in the laboratory and the student is taught to depend on his own resources and to check his results.

[Two laboratory hours a week for two terms.]

(b) Laboratory. For Mechanical and Electrical Engineering students. The application of mathematics in physical work. Measurements of length, mass and time. Work in mechanics, light and sound. The work is done in the laboratory and the student is taught to depend on his own resources and to check his results.

[Two laboratory hours a week for two terms.]

PHYSIOLOGY

I.

(a) This course comprises lectures, recitations and demonstrations based upon *Thornton's Text-book of Human Physiology.* A liberal supply of models, charts and manikins are at hand to facilitate all demonstrations required.

(b) Laboratory work consisting of a selected number of experiments so arranged as to give the student a fair insight into modern experimental physiology.

(c) A limited number of microscopical preparations are required to be made by each student, and he must examine a set of typical preparations in order to acquire a fair knowledge of the microscopical structure of the tissues and organs of the human body.

(d) During the course special lectures will be given upon personal, domestic and municipal hygiene.

[Four recitations and one laboratory period for one term.]

II.

(a) This course comprises a complete study of human physiology such as is required of students of medicine. The lectures, recitations and demonstrations are based upon *Kirk's Handbook of Physiology* and *Hall's Text-book of Physiology.*

(b) Laboratory work in experimental physiology. The manual used is *Hall's Experimental Physiology,* but the student will have free access to a number of other similar works.

[Four recitation hours and two laboratory periods for two terms.]

ZOOLOGY

I.

This course comprises:

(a) Lectures, recitations and demonstrations based upon *Hegner's College Zoology.*

(b) Lectures, readings and recitations based upon *Parker's Elementary Course in Biology.*

(c) Laboratory work on Invertebrata as outlined in *Pratt's Invertebrate Zoology,* and *Parker's Biology.*

(d) Mammalian Osteology including the study of one or two types of skeletons belonging to each order of mammalia. The work is outlined in *Kirsch's Elementary Course in Mammalian Osteology.*

[Two recitation hours and three laboratory periods for first term; three recitation hours and three laboratory periods for the second term.]

II.

This course comprises:

(a) Recitations, lectures and demonstrations based upon *Hertwig's Manual of Zoology.*

(b) Laboratory work upon some Invertebrate in order to complete and supplement the work under *(c)* in Course I.

(c) Dissection and laboratory work upon one or two types in each of the classes of Vertebrate, viz.: fish, frogs, newt, turtle, snake, mammal; the text-book used is *Pratt's Vertebrate Zoology.*

(d) A more extended study of mammalia with reference to the cat as outlined in *Davison's Mammalian Anatomy.*

(e) An outline of comparative Embryology of animals.

STUDIES SPECIAL TO CIVIL ENGINEERING

I.

DESCRIPTIVE GEOMETRY. In this course are considered problems on the point, right line, and plane; single curved, double curved, and warped surfaces; problems relating to tangent planes, to single curved, double curved, and warped surfaces; intersection of surfaces; spherical projections; orthographic, stereographic, globular, cylindrical, and conic projections; construction of maps, shades and shadows; linear perspective; isometric projections; theory and plates. Numerous practical problems and exercises requiring the application of the principles of Descriptive Geometry, are added by the instructor.

[Three hours a week for two terms.]

II.

SURVEYING. This course comprises the whole theory of land surveying and leveling; the use and adjustment of the transit, compass, level, and plane table; methods of measuring; relocations of boundaries; supplying omissions; obstacles to measurement; computations; field notes and plots; laying out land; parting off land; dividing up land; public lands survey; solar attachment; topographical surveying with the transit and stadia; mining surveying, mining claims; survey of mines with shafts and drifts; determining positions of ends of tunnels, and depths below surface; Hydrographic surveying which comprises a study

of the methods of making soundings and locating the same; the use of bench-marks, gauges, and water levels; stream measurements, methods and instruments used. City surveying, including a study of re-surveys, topographic surveys, city plan, location of streets, width of grades, field notes, indexing and records. Field practice and application of theory; adjustment and use of instruments in the field; solution of problems in the field, the theory of which is taught in the class room; practice in keeping field notes; computation and plots.

[Four hours a week for one term.]

III.

GEODESY. This is an elementary course prescribed for Civil Engineering students and comprises a study of the instruments and methods of observation, base measurements and field work of the triangulation; method of least squares, elementary course; calculation of the triangulation, and theory of probable errors; geodic latitudes, longitudes, and azimuths. This is followed by a brief discussion of the figure of the earth.

[One hour a week for one term.]

IV.

RAILROAD SURVEYING. This course comprises all the theory pertaining to reconnoissance and preliminary surveying for a railroad; theory and maximum economy in grades and curves; location of curves by deflection angles and offsets; obstacles to location of curves; special problems in curves; theory of compound curves; turnouts and crossings; curving the rail on curves and elevation of outer rail; easing grades on curves; vertical curves; earthwork and prismoidal formula; theory of excavation and embank-

ment; correction in excavation on curves; cross-section leveling; theory of the transition curve and practical applications. Exercise in the field; staking out and running tangents, simple, compound and transition curves; execution on the ground of many problems previously treated theoretically; survey for a short line of railroad, leveling, cross-section work, and setting slope stakes; making profiles and maps; calculating the necessary excavations and embankments and cost of construction; culverts.

[Five hours a week for one term.]

V.

Analytic Mechanics. The aim of this course is to prepare students of engineering for the study of the courses of applied mechanics. The course comprises a study of the fundamental principles of statics, kinematics and kinetics. The subjects selected are studied with the object of thoroughly preparing the engineering student to pursue the technical and practical branches of their respective courses. Some of the topics considered in this course are: work, energy, conservation of energy; power, composition and resolution of forces, center of gravity, center of mass, moment of inertia, acceleration, dynamics of rigid bodies, laws of friction, etc.

[Five hours a week for first term. Two hours a week for second term.]

VI.

Mechanics of Materials. This course is intended to meet the requirements of engineering students, and to prepare them, by study of the action and effect of forces on beams and structures, to design economically and intelligently the parts entering into a complete structure. The

course comprises a study of the elastic and ultimate strength and ultimate deformation of the materials of engineering, their properties and method of testing, and discussion of cases of simple stresses. The general theory of beams including cases of simple and cantilever beams, overhanging, fixed, and continuous beams, is thoroughly investigated. Columns are examined according to Euler's, Rankin's and other formulae, and results compared. Some of the other subjects considered in this course are torsion of shafts, the transmission of power by shafts, apparent combined stresses, such as flexure and compression, flexure and torsion, etc. Compound columns and beams, reinforced concrete beams, plate girders and other forms. Then is studied the subjects, resilience and work, impact and fatigue, true internal stresses, centrifugal tension and flexure, unsymmetric loads on beams, the course closing with a study of the mathematical theory of elasticity.

[Three hours a week for one term.]

VII.

GEOLOGY. Lectures, recitations, demonstrations. The study of the general features of the earth; the material composing the accessible parts of the earth; the arrangements of the material in rocks; the causes of geological changes; the history of the earth and the various forms of life that existed in the different periods of successive geological ages.

[Four hours a week for one term.]

VIII.

MINERALOGY. The object of this course is to train the student to identify minerals by their physical characteristics, such as crystal form, cleavage, color, hardness and

specific gravity without having to resort to blowpipe or chemical tests except in the rare minerals.

A study of crystallography and the classification of minerals, accompanied by practice in the laboratory and museum in the determination of minerals, especially the ores. Blow-pipe analysis.

[Two hours a week for one term.]

IX.

ASTRONOMY. Practical. This course is designed to meet the requirements of Civil Engineering students and to give them the training and information necessary for intelligently executing certain departments of work to which they may be assigned in the course of their professional career.

[Three hours a week for one term.]

X.

STEREOTOMY. This course comprises a study of the application of the principles of Descriptive Geometry to the determination of the forms and sizes of the stones used in the construction of the different classes of arches and masonry structures. This course is given by lectures in the drawing room, explaining the construction of templates, and the use of directing instrument; also explanations of methods of drawing plans, elevation and development of oblique arches, wing walls and the like. A certain number of plates and drawings is required, illustrating the methods of performing practical work.

Drawing and designing plans, elevations and sections of masonry construction, foundations, dams, piers, abutments, culverts, and arches.

[Two hours a week for one term.]

XI.

BRIDGE DESIGNING. This course proceeds from simple framed girders to complete bridge-trusses of various designs—required of Seniors. Complete design of a railroad bridge and detail drawings—a short general course of bridge designing.

XII.

ROAD ENGINEERING. This course is intended to familiarize the student with the practical details of laying out and constructing highways, the method of drainage, grading, and most suitable road covering, the improvement of streets in cities and materials used for paving and covering. The manner of preparing the street before paving is placed in position is fully considered and illustrated. The course includes a thorough discussion of the theory of pavements and a description of the various materials used, such as cobble and stone-block, asphalt, brick, wood and broken stone pavements. The method of preparing plans and specifications for the various conditions arising are considered and original plans are prepared by students. Attention is also given to the construction of street-car tracks in paved streets.

[Three hours a week for one term.]

XIII.

THEORY OF EARTH PRESSURE, ETC. The theory of earth pressure, and the design of retaining walls; foundations suitable for structures of various classes in connection with which the student becomes acquainted, not only with the methods for ascertaining the bearing power of the foundation, but also the means for constructing deep foundations. The methods for tunnel construction, irrigating canals, river

improvements, are included in the course and given by text-book and lectures. The part pertaining to masonry construction include a study of the properties of stone, brick, mortar, the manner of testing foundations under water, the crib and open caisson process, the pneumatic process, the theory of masonry arches and designs, arch centers, selection of site for bridge piers and arrangement of spans, the details of construction of bridge piers and manner of location, specifications for masonry, etc.

[Five hours a week for two terms.]

XIV.

Bridge Analysis. This course comprises a study of the different systems of trussed bridges and roof trusses, and the calculation of the strains produced when loaded in any manner, the weight of the structure and the effect of wind included. Both graphical and analytical methods are used. Besides the various systems of trussed bridges, which are studied in detail, the plate girders, suspension bridges, cantilever bridges, draw bridges, and roofs of various designs are given equal attention; the purpose being to familiarize the student with the different forms and enable him to design and to estimate the cost of construction.

[Five hours a week for one term.]

XV.

Graphic Statics. This course teaches the determination of stresses in framed structures by the graphical method. Shearing forces, bending moments, centers of gravity, and moments of inertia are graphically determined by the application of the principles of the force and equilibrium polygons; also the determination of stresses in

bridge trusses with parallel chord and with broken chords, caused by uniform loads and locomotive wheel loads; graphical determination of stresses in roof trusses, graphical treatment of the arch symmetrical and unsymmetrical cases, graphical methods of arch-ribs of hinged ends, and of fixed ends; stress diagrams; temperature stresses; braced arches; graphics applied to continuous girders. This course is supplemented by full explanations, notes, examples and problems.

[Five hours a week for one term.]

XVI.

Hydraulics. This course is a thorough study of the theory of hydrostatics, hydraulics, and hydro-dynamics, to which are added many practical exercises. The subjects admitted are the transmission of pressures, center of pressures; velocity of flow from orifices of various shapes; fluid friction; Bernaulli's theorem with friction; Chezy's formula; Kutter's formula; flow over weirs, and through tubes; flow in pipes; loss of head in friction and other losses; flow in conduits, canals, and rivers; velocities in cross sections; methods of gauging the flow, measurement of water power, dynamic pressure of flowing water; designing of waterworks and standpipes; hydraulic motors and relative merits; discussion of water wheels of different types, and a study of the conditions determining high efficiencies; classification of turbines, and a complete study and discussion of the different forms.

[Three hours a week for two terms.]

XVII.

Sewerage. This course is a study of the principles and methods of drainage and disposal of sewage in populous

districts: shape, material and calculation of sewers; catch-basins, flushing and ventilation; separate and combined systems compared; pollution of rivers; chemical precipitation; results and costs of purification; general municipal and domestic sanitation; inspection of neighboring works.

[Two hours a week for two terms.]

XVIII.

Engineering Contracts. The study of formal contracts and specifications with a view to exactness of detail.

[Two hours a week for one term.]

Thesis. A thesis on some subject approved by the head of the department connected with the course of study, is required of each student as a condition of graduation. The thesis must embody the results of original research.

PREPARATORY
OR
HIGH SCHOOL COURSES

PREPARATORY OR HIGH SCHOOL

The programs of studies in the High School Department are arranged not only to meet the need of thorough preparation for the various lines of College work, but also to afford a fairly liberal education to students who may never take up College studies. The period of instruction covers four years, and diplomas are conferred.

The Commercial program contains the most important of ordinary High School subjects, together with the special Commercial studies. Students who are unable to pursue this four-year program may take merely the Commercial studies and receive a certificate on the completion of such studies. Graduates of High Schools or students who have already had two or three years of High School work should be able to complete the purely Commercial branches in one year.

STUDIES PREPARATORY FOR THE DEPARTMENT OF CLASSICS IN THE COLLEGE OF ARTS AND LETTERS

FIRST YEAR

SUBJECTS First Semester	Hrs. a Week	See for Description Page	Course	SUBJECTS SecondSemester	Hrs. a Week	See for Description Page	Course
Latin	5	83	A	Latin	5	83	A
English	5	78	A	English	5	78	A
History	5	82	A	History	5	82	A
Mathemat's	5	84	A	Mathem'cs	5	85	B
Science	5	86	B	Science	5	87	D

SECOND YEAR

Latin	5	83	B	Latin	5	83	B
Greek	5	81	A	Greek	5	81	A
English	5	78	B	English	5	78	B
History	5	83	B	History	5	83	B
Mathemat's	5	85	C	Science	5	87	C

THIRD YEAR

Latin	5	84	C	Latin	5	84	C
Greek	5	81	B	Greek	5	81	B
English	5	79	C	English	5	79	C
History	5	83	C	Civil Gov't	5	76	A
Mathemat's	5	85	D	Mathem'cs	5	85	D

FOURTH YEAR

Latin	5	84	D	Latin	5	84	D
Greek	5	81	C	Greek	5	81	C
English	5	79	D	English	5	79	D
German or	5	82	A	German or		82	A
French	5	80	A	French	5	80	A
Science or	5	87	E	Science or	5	87	E
Science	5	88	F	Science	5	88	F

STUDIES PREPARATORY FOR THE DEPARTMENT OF LETTERS AND THE DEPARTMENT OF HISTORY AND ECONOMICS IN THE COLLEGE OF ARTS AND LETTERS

FIRST YEAR

SUBJECTS First Semester	Hrs. a Week	See for Description Page	Course	SUBJECTS SecondSemester	Hrs. a Week	See for Description Page	Course
Latin	5	83	A	Latin	5	83	A
English	5	78	A	English	5	78	A
History	5	82	A	History	5	82	A
Mathemat's	5	84	A	Mathem'cs	5	85	B
Science	5	86	B	Science	5	87	D

SECOND YEAR

Latin	5	83	B	Latin	5	83	B
French or		80		French or		80	
German	5	82	A	German	5	82	A
English	5	78	B	English	5	78	B
History	5	83	B	History	5	83	B
Mathemat's	5	85	C	Science	5	87	C

THIRD YEAR

Latin	5	84	C	Latin	5	84	C
French or		80		French or		80	
German	5	82	B	German	5	82	B
English	5	79	C	English	5	79	C
History	5	83	C	Civil Gov't	5	76	A
Mathemat's	5	85	D	Mathem'cs	5	85	D

FOURTH YEAR

Latin	5	84	D	Latin	5	84	D
French or		80		French or		80	
German	4	82	C	German	4	82	C
English	5	79	D	English	5	79	D
German or				German or			
French*	5	80	A	French	5	80	A
Science or	5	87	E	Science or	5	87	E
Science	5	88	F	Science	5	88	F

*Students who begin French A in the second year must begin German A in the fourth year.

STUDIES PREPARATORY FOR THE COLLEGE OF SCIENCE

FIRST YEAR

SUBJECTS First Semester	Hrs. a Week	See for Description Page	Course	SUBJECTS SecondSemester	Hrs. a Week	See for Description Page	Course
English	5	78	A	English	5	78	A
Mathemat's	5	84	A	Mathem'cs	5	85	B
Latin	5	83	A	Latin	5	83	A
Drawing	5	77	A	Drawing	5	77	A
Science	5	86	A	Science	5	87	D

SECOND YEAR

English	5	78	B	English	5	78	B
Mathemat's	5	85	C	Drawing	5	77	I
History	5	82	A	History	5	82	A
Science	5	86	B	Science	5	87	C
Latin	5	83	B	Latin	5	83	B

THIRD YEAR

English	5	79	C	English	5	79	C
Mathemat's	5	85	D	Mathem'cs	5	85	D
German*	5	82	A	German	5	82	A
History	5	83	B	History	5	83	B
Science	5	87	E	Science	5	87	E

FOURTH YEAR

English	5	79	D	English	5	79	D
Mathemat's	5	86	E	Mathem'cs	5	86	F
German	5	82	B	German	5	82	B
Science	5	88	F	Science	5	88	F
History	5	83	C	Civil Gov't	5	76	A

*French or Spanish may replace German.

STUDIES PREPARATORY FOR THE COLLEGES OF ENGINEERING AND ARCHITECTURE

FIRST YEAR

SUBJECTS First Semester	Hrs. a Week	See for Description Page	Course	SUBJECTS SecondSemester	Hrs. a Week	See for Description Page	Course
English	5	78	A	English	5	78	A
Mathemat's	5	84	A	Mathem'cs	5	85	B
Drawing	5	77	A	Drawing	5	77	A
Science	5	86	A	Science	5	87	D
German*	5	82	A	German	5	82	A

SECOND YEAR

English	5	78	B	English	5	78	B
Mathemat's	5	85	C	Drawing	5	77	I
History	5	82	A	History	5	82	A
Science	5	86	B	Science	5	87	C
German	5	82	B	German	5	82	B

THIRD YEAR

English	5	79	C	English	5	79	C
Mathemat's	5	85	D	Mathem'cs	5	85	D
History	5	83	B	History	5	83	B
Science	5	87	E	Science	5	87	E
German	4	82	C	German	4	82	C

FOURTH YEAR

English	5	79	D	English	5	79	D
Mathemat's	5	86	E	Mathem'cs	5	86	F
History	5	83	C	Civil Gov't	5	76	A
Science	5	88	F	Science	5	88	F

*French or Spanish may be substituted for German.

COMMERCIAL PROGRAM

FIRST YEAR

SUBJECTS First Semester	Hrs. a Week	See for Description Page	Course	SUBJECTS Second Semester	Hrs. a Week	See for Description Page	Course
English	5	78	A	English	5	78	A
Mathemat's	5	84	A	Mathem'cs	5	85	B
History	5	82	A	History	5	82	A
*Latin	5	83	A	Latin	5	83	A
Science	5	86	A	Science	5	86	B

SECOND YEAR

English	5	78	B	English	5	78	B
Mathemat's	5	85	D	Mathem'cs	5	85	D
History	5	83	B	History	5	83	B
Latin	5	83	B	Latin	5	83	B
Science	5	87	E	Science	5	87	E

THIRD YEAR

English	5	79	C	English	5	79	C
Bookkeep'g	5	89	I	Bookkeep'g	5	89	I
Arithmetic	5	89	IV	Arithmetic	5	89	IV
Mathemat's	5	85	C	Mathem'cs	5	86	E
Penmanship / Typewriting	5	90	I	Penmans'p / Typewrit'g	5	90	I

FOURTH YEAR

English	5	79	D	English	5	79	D
Bookkeep'g	5	90	II	Bookkeep'g	5	90	II
Com'l Law	5	90	A	Civil Gov't	5	76	A
Science	5	88	F	Science	5	88	F
Penmanship / Typewriting	5	90	II	Penmans'p / Typewrit'g	5	90	II

*French, German or Spanish may replace Latin.

Short Hand, as an elective, may replace certain studies.

TABLE SHOWING MINIMUM NUMBER OF CREDITS OR UNITS REQUIRED FOR A DIPLOMA IN THE HIGH SCHOOL DEPARTMENT

	COURSES						
SUBJECTS	Classical	Commercial	English	Engineering	Science	Law	General
English	4	4	4	4	4	4	4
Latin	4		4		2	2	
Greek	3						
Modern Language			2	3	2	2	2
History	2	2	2	2	2	3	2
Algebra	1	1	1	1½	1½	1	1
Geometry	1	1	1	1½	1½	1	1
Trigonometry				½	½		
Science	1	2	1	2	2	2	2
Drawing				1	½		
Commercial		6					
Elective			1	½		1	4
TOTAL	16	16	16	16	16	16	16

DETAILED DESCRIPTION
OF
PREPARATORY
OR
HIGH SCHOOL STUDIES

PREPARATORY COURSES

CIVIL GOVERNMENT

A.

This is a study of the science of government in connection with American institutions. The subject begins by defining government; then is considered the object and necessity of government; origin of civil society; the principle of suffrage; different forms of government defined and compared; theories of representation. These topics necessarily are treated briefly, as the principal part of the course consists of a study of the Colonial government, the Articles of Confederation and their defects, the formation of the Constitution and its adoption. The study further comprises a critical analysis of each article and section of the American Constitution.

[Five hours a week for one semester.]

CHRISTIAN DOCTRINE

A.

(a) *Manual of Christian Doctrine, Part I.*
[Three hours a week for two semesters.]

(b) *New Testament.*
[Two hours a week for two semesters.]

B.

(a) *Manual of Christian Doctrine, Part II.*
[Three hours a week for two semesters.]

(b) *New Testament.*
[Two hours a week for two semesters.]

C.

(a) Manual of Christian Doctrine, Part III.
[Three hours a week for two semesters.]

(b) New Testament.
[Two hours a week for two semesters.]

D.

(a) Church History.
[Three hours a week for two semesters.]

(b) Old Testament.
[Two hours a week for two semesters.]

DRAWING

A.

This work is based on the rudiments of drawing and consists of the training necessary for the hand and the eye. Sketching is also done from simple objects of various forms.

[Five hours a week for one year.]

B.

Advanced work in sketching from objects such as the plaster cast of flowers and suitable ornaments which afford the study of light and shade.

[Five hours a week for one year.]

I.

This is an elementary course in Mechanical Drawing. It teaches the student the use of mechanical instruments and prepares him for more advanced work. It involves elementary projections and mechanical lettering.

[Five hours a week for one year.]

II.

A more advanced course in Mechanical Drawing. The student obtains a more extensive knowledge of projections from the geometrical problems presented for solution. In addition to such problems the student is required to execute original designs and plans of elementary subjects.

[Five hours a week for one year.]

ENGLISH

A.

(a) Lockwood and Emerson: *Composition and Rhetoric,* with daily exercises in class. Two themes a week.

(b) The elements of versification. Scansion, one hour a week. Weekly exercises in writing verse. Memory work.

(c) Required reading: Robinson Crusoe, *Evangeline, Treasure Island, Snow-Bound, *The Sketch Book, *The Vision of Sir Launfal, *Poe's* Tales, *Poe's* Poems, *Julius Cæsar, *The Merchant of Venice.

*(*The works marked with an asterisk are to be studied; the others read.*)*

[Five hours a week for two semesters.]

B.

(a) New Composition and Rhetoric, by *Herrick and Damon, Part I,* with daily exercises in class. Two themes a week.

(b) The simpler verse forms. Weekly exercises. Memory work.

(c) Required reading: Ivanhoe, *The Lady of the Lake, *The Vicar of Wakefield, *The Ancient Mariner, The Imi-

tation of Christ, The Courtship of Miles Standish, Silas Marner, The Princess, Macbeth, As You Like It.

[Five hours a week for two semesters.]

C.

(a) New Composition and Rhetoric, by *Herrick and Damon, Parts II, III,* with daily exercises in class. Weekly theme. History of American Literature.

(b) Verse forms continued. Weekly exercises. Memory work.

(c) Required reading: *Lamb's* Essays of Elia, *Newman's* Apologia, *Macaulay's* Essay on Addison, The Golden Treasury of English Lyrics, *Macaulay's* Essay on Milton, *Milton's* Minor Poems, A Midsummer Night's Dream, *Burke's* Speech on the Conciliation of America, *Webster's* Bunker Hill Oration, *Lincoln's* Gettysburg Oration, King Lear.

[Five hours a week for two semesters.]

D.

(a) New Composition and Rhetoric, by *Herrick and Damon, Parts IV, V,* with daily exercises in class. Fortnightly essay first semester; monthly essay second semester. History of English Literature.

(b) Verse forms concluded. Weekly exercises. Memory work.

(c) Required reading: The House of the Seven Gables, *The Idylls of the King, Selections from Paradise Lost, *Cary's* Dante, *Gate's* Selections from Newman, *The Dream of Gerontius, *Pope's* Homer, *The Tempest, *Aubrey de Vere's* Poems, and *Hamlet.

*(*The works marked with an asterisk are to be studied; the others read.*)*

[Five hours a week for two semesters.]

FRENCH

A.

Grammar with written and oral exercises; the inflection of nouns and adjectives, the use of all the pronouns, the conjugation of regular and the common irregular verbs; the correct use of moods and tenses, the essentials of French syntax, and the common idiomatic phrases. *Frazer and Squair's Grammar.* Reading three of the following: *La Tache du Petit Pierre, Mairet; Un Cas de Conscience, Gervais; La Main Malheureuse, Guerber; Sans Famille, Malot; Super's Readings from French History.*

[Five hours a week for two semesters.]

B.

Advanced grammar and composition, study or idioms, memorizing. *Frazer and Squair's Grammar.* Dictations and conversations are added on practical topics, and careful translation made of five of the following works: *Le Voyage de M. Perrichon, Labiche; Roman d'un Jeune Homme Pauvre, Feuillet; Fables choisies, La Fontaine; Le Medicin Malgre Lui, Moliere; Le Cid, Corneille; Esther, Racine; Pages oubliees de Chateaubriand; La Question d'Argent, Dumas; Standard French Authors, Guerlac.*

[Five hours a week for two semesters.]

C.

The study of this course is devoted chiefly to the prose and poetry of the nineteenth century and includes composition, conversation, history and general view of French literature. Besides a reading and criticism of the best writers, such as: *Causeries du Lundi, Ste. Beuve; On Rend l'Argent, Coppee; Hernani; Hugo; Meditations, Lamartine;*

Athalie, Racine; L'Avare, Moliere; Mlle. de le Seigliere, Sandeau; Les Origines de la France Contemporaine, Taine; Expedition de Bonaparte en Egypte, Thiere; Ste. Elizabeth de Hongrie, Montalembert; Historie de la Litterature Francaise, Duval.

[Four hours a week for two semesters.]

N. B.—The works studied are not necessarily the same every year.

GREEK

A.

GRAMMAR. Etymology, *Goodell.*

LESSONS FOR BEGINNERS, *Morrison and Goodell.*

EPITOME OF THE NEW TESTAMENT. Part I, *Stoffel.*

[Five hours a week for two semesters.]

B.

GRAMMAR. Etymology reviewed and Syntax begun, *Goodell.*

XENOPHON. Anabasis, Four Books, *Smith.*

COMPOSITION. Based on the Anabasis.

EPITOME OF THE NEW TESTAMENT. Part II. *Stoeffel.*

[Five hours a week for two semesters.]

C.

GRAMMAR. Completed.

XENOPHON. Selections from Memorabilia.

PROSE COMPOSITION.

HOMER, *Iliad,* Six Books, *Seymour.*

EPITOME OF THE NEW TESTAMENT. Part III. *Stoffel.*

[Five hours a week for two semesters.]

GERMAN

A.

GRAMMAR. *Thomas, Part I.* Translations from German into English of simple prose; translation of English exercises into German. Reading of short stories and selections from more difficult prose.

German Reader, *Thomas and Hervey.*

[Five hours a week for two semesters.]

B.

GRAMMAR. *Thomas, Part II.* Translation into German of narrative prose and selections from history.

Herman and Dorothea, *Goethe;* Lichtenstein, *Hauff.*

[Five hours a week for two semesters.]

C.

GRAMMAR. *Thomas, Parts III and IV.* Sight reading of plays, poems and prose writings. Translation of selections from history and literature; original essays.

Minna von Barnhelm, *Lessing;* best known poems, *Heine;* Correspondence, *Schiller-Goethe.*

[Four hours a week for two semesters.]

HISTORY

A.

ANCIENT HISTORY. *Meyers' Ancient History.* The Eastern Nations. The History of Greece and of the Empire of Alexander. The Story of Rome. The Establishment of the Empire, and the Rise of Christianity. The Roman-German, or Transition Age.

[Five hours a week for two semesters.]

B.

MEDIEVAL AND MODERN HISTORY. *New Medieval and Modern History* by *Harding.* The Barbarian Kingdoms. The Church. The Rise of Islam. Holy Roman Empire. Papacy. Crusades. Growth of the Nations. The Renaissance. The Reformation. Spain, France, England. The French Revolution and Napoleonic Wars. European Expansion in the nineteenth century.

[Five hours a week for two semesters.]

C.

AMERICAN HISTORY. *Students' History of the United States,* by *Channing.* Pre-Columbian Voyages. Discovery and Exploration. Colonization. Intercolonial Union. War of Independence. The Constitution. Federalist Supremacy. Jeffersonian Republicans. War. Peace. The National Democracy. Slavery. Secession. The Civil War. National Development.

[Five hours a week for one semester.]

LATIN

A.

Essentials of Latin, *Pearson.*
EXERCISES.

[Five hours a week for two semesters.]

B.

GRAMMAR. Review of Etymology, Syntax.
CAESAR. Books I-IV.
PROSE COMPOSITION. Based on *Caesar.*

[Five hours a week for two semesters.]

C.

GRAMMAR. Syntax, *Bennett.*

NEPOS. Selected Lives.

SALLUST. Catiline.

CICERO. Orations I-III, against Catiline.

PROSE COMPOSITION. Based on authors read.

[Five hours a week for two semesters.]

D.

GRAMMAR. Complete review.

CICERO. Three orations including *Pro Lege Manilia.*

OVID. Metamorphoses.

VERGIL. *Aeneid,* six books. The explanations cover peculiarity of syntax, figures, mythology.

PROSODY. Study of hexameter verse.

PROSE COMPOSITION. Based on *Cicero.*

[Five hours a week for two semesters.]

MATHEMATICS

A.

ALGEBRA. This course for beginners in Algebra includes a study of the primary fundamental principles necessary to the courses which follow. The subjects dwelt upon in particular are factoring, highest common factor and least common multiple, which are afterwards applied in their relation to Fractions and the reduction of Complex Fractions. In as far as possible, concrete examples of their applications to kindred scientific subjects are applied by the teacher. Text-book, *First Course in Algebra,* by Hawkes, Luby, Touton.

[Five hours a week for one semester.]

B.

ALGEBRA. In this course the study of equations is begun and continued through equations of the first degree, fractional equations and systems of simultaneous equations. Involution, evolution, radicals and exponents complete the course, which is supplemented wherever possible with problems of practical application. Text-book, *First Course in Algebra,* by Hawkes, Luby, Touton.

[Five hours a week for one semester.]

C.

ALGEBRA. This course begins with quadratic equations, pure and affected, followed by systems of simultaneous quadratic equations and those forms of radical equations of higher degree which may be solved by quadratic methods. Ratio and proportion, indeterminate equations, surds, imaginaries, inequalities, the progressions and the binomial theorem finish the work in this course. As in the preceding courses, special stress is placed upon the application of the theory to such examples as will show its application to elementary scientific subjects. Text-book, *Second Course in Algebra,* by Hawkes, Luby, Touton.

[Five hours a week for one semester.]

D.

GEOMETRY. This subject is completed as far as the end of plane geometry and includes a study of the theorems with proofs of exercises and original propositions. The habit of independent thinking is cultivated to some extent by the solution of special problems of concrete nature intended to exhibit the relation of the process studied to practical examples. Text-book, *Wentworth and Smith.*

[Five hours a week for two semesters.]

E.

GEOMETRY. The study of solid geometry. Planes, solid angles, polyhedrons, the cylinder, cone and sphere are all studied in detail and the solution of original exercises and propositions of application is made a feature of the course. Text-book, *Wentworth and Smith.*

[Five hours a week for one semester.]

F.

TRIGONOMETRY. A half year is given to this subject which includes both plane and spherical trigonometry. The work done is the equivalent of that in most of the elementary text-books. Special attention is given to goniometry on account of its application to calculus, and examples of a concrete nature are abundantly supplied. Text-book, *Wentworth.*

[Five hours a week for one semester.]

SCIENCE

A.

PHYSICAL GEOGRAPHY. An introductory and elementary study of the earth and its environments. The student will be led into a closer sympathy with the world about him. The various types of plant and animal life, together with topographical and climatic conditions, will be considered. Text-book, *Tarr.*

[Five hours a week for one semester.]

B.

PHYSIOLOGY. Lectures, recitations and demonstrations with the stereopticon. The study of the human skeleton

including the physiology and hygiene of the bones. The action, relation, structure and hygiene of muscles. The digestive, circulatory and excretory systems demonstrated by models and charts. The anatomy and structure of the nervous system and simple experiments on the same. Text-book, *The Human Mechanism,* by Hough & Sedgwick.

[Five hours a week for one semester.]

C.

Botany. This course is designed for beginners in this subject; it includes a study of the higher plants with reference to structure of root, stem, leaf, flower and seed. An introduction to the lower forms of plant life and their classification is also given. Text-book, *Bergen-Caldwell.*

[Five hours a week for one semester.]

D.

Zoology. This course includes an introduction to the subject with studies of representative forms and their classification in the different groups of the animal kingdom. The subject is taught by recitations and laboratory work. Text-book, *Linville and Kelly.*

[Five hours a week for one semester.]

E.

(*a*) Chemistry. An introductory course of experimental lectures on familiar subjects such as water, the air and its constituents, common salt, etc., leading up to discussions of the more important elements and their properties, and the fundamental laws and phenomena of chemistry. Text-book, *Morgan and Lyman.*

[Three hours a week for two semesters.]

(*b*) Experimental Chemistry. A laboratory course to accompany Course (*a*). A series of exercises to be performed by each student, and having as their main object the cultivation of the student's powers of observation and faculty of inductive reasoning. These exercises comprise a study of the principal metallic elements including their preparation, properties and more familiar compounds. The directions for each experiment are made as brief as possible; the observation of facts and the drawing of correct conclusions therefrom being left, so far as the nature of the experiment will permit, to the student. Laboratory Manual, *Morgan and Lyman.*

[Two hours each week for two semesters.]

F.

Physics. Instruction in elementary physics is given by lectures and recitations in which the general laws of mechanics, heat, acoustics, optics, electricity and magnetism are presented. The course is intended to meet the needs of those who desire a general knowledge of the subject, as well as to lay the foundations for advanced work. Particular attention is paid to the correct statement of principles so that in his advanced work the student will have nothing to unlearn or relearn. Text-book, *Millikan and Gale.*

[Three hours a week for two semesters.]

Laboratory Work of this course consists of a series of experiments which verify and apply practically the fundamental principles of physics. The student also receives instruction in the use and careful handling of apparatus, accurate observation, and correct deduction of results. Neat and concise reports of all experiments are kept by

each student and form the basis for the grades in this work. Laboratory Manual, *Millikan and Gale.*

[Two hours each week for two semesters.]

SPANISH

A.

General outlines of grammar with composition. Translation of easy tales from *Trueba, Fernon, Caballero, Perez Escritch,* etc., with select fables of *Samaniego,* and *Iriate.*

[Five hours a week for two terms.]

B.

Spanish prose and poetry of the eighteenth and nineteenth centuries, with composition and the history of the literature of the period.

[Five hours a week for two terms.]

STUDIES PURELY COMMERCIAL

ARITHMETIC

IV.

Percentage in its application to discounts, loss and gain, commission and interest (reviewed). Partial payments, equation of accounts, savings bank accounts, stocks and bonds, insurance, compound interest, partnership.

Frequent drills in rapid calculation and short methods.

[Five hours a week for one year.]

BOOKKEEPING

I.

Preparatory instruction and definitions. Initiatory sets of Double Entry. Retailing by Double Entry. Special

practice in writing business papers and business forms. Single Entry. Changing Single to Double Entry.

[Five hours a week for one year.]

II.

Retailing. Wholesaling. Shipping and Commission. Jobbing. Manufacturing. Installment and state agencies. Joint stock companies. Banking.

Business Practice and Office Work.

[Five hours a week for one year.]

COMMERCIAL LAW

A.

Text-book, *Huffcut's Elements of Business Laws.*

[Five hours a week for one-half year.]

PENMANSHIP

The Palmer Method of Business Penmanship.

[Two hours a week for two years.]

TYPEWRITING

I.

Special exercises in touch typewriting. The student makes copies of different kinds of correspondence and legal forms.

[Three hours a week for one year.]

II.

SPEED CLASS. Tabulating, manifolding, machine dictation and work for the Faculty.

[Three hours a week for one year.]

SHORTHAND

I.

Isaac Pitman's Short Course in Phonography.

II.

Speed Class.

GRAMMAR SCHOOL WORK

In addition to the College Courses and to the High School Courses, Columbia conducts a Junior Preparatory Department in which the higher grades of a Grammar School are taught, the students having every opportunity of preparing themselves as rapidly as possible for High School work.

LIST OF STUDENTS

MATRICULATION DURING THE SCHOLASTIC YEAR FROM SEPTEMBER, 1915, TO JUNE, 1916

LIST OF STUDENTS FOR THE YEAR 1915-16

Allen, Fred ..... Oregon
Abbott, James ..... Oregon
Beard, Dwight ..... Washington
Buchanan, Henry ..... Texas
Blazier, Eugene ..... Oregon
Barr, Karl ..... Oregon
Bennett, Alfred ..... Oregon
Brown, Joseph ..... Oregon
Butler, Bancroft ..... Oregon
Brooke, Kenneth ..... Oregon
Burke, Thomas ..... Oregon
Ballf ..... Oregon
Bailey, Clarke ..... Oregon
Benz, Emil ..... Oregon
Bloch, Laurence ..... Oregon
Canning, Leo ..... Oregon
Clarke, Worth ..... Idaho
Clark, Henry ..... Alaska
Casey, Allen ..... Oregon
Connolly, Harold ..... Oregon
Convill, Edmund ..... Oregon
Costello, Willard ..... Oregon
Collins, William ..... Oregon
Drake, Percy ..... Oregon
Duke, Wilson ..... Oregon
Driscoll, William ..... Oregon
Douglas, Raymond ..... Oregon
Durbin, Arthur ..... Oregon
Delany, Henry ..... Montana
Dewey, Con ..... Idaho
Doherty, Bernard ..... Oregon
Donlan, William ..... Oregon
Daly, Milton ..... Alaska
Dundas, Louis ..... Oregon
Dundas, Robert ..... Oregon
Devonshire, Louis ..... Washington
Flynn, James ..... Oregon
Foley, Charles ..... Oregon

Fahey, Angus.....Oregon
Gravelle, Wilfred.....Oregon
Glennon, Fenton.....Oregon
Higgins, Joseph.....Oregon
Hodler, Albert.....Oregon
Hood, Emmet.....Idaho
Jacobberger, Hubert.....Oregon
Jacobberger, Vincent.....Oregon
Jacobberger, Bertrand.....Oregon
Jacobberger, Francis.....Oregon
Jacobsen, Fred.....Oregon
Keady, Lynn.....Oregon
Kill, Fred.....Washington
Klingele, Victor.....Washington
Kenny, Joseph.....Oregon
Kuehle, Henry.....Oregon
Kane, Francis.....Oregon
Keenan, Vincent.....Oregon
Knapp, Lloyd.....Oregon
Knapp, Orris.....Oregon
Klein, Lewis.....Oregon
Kern, Francis.....Oregon
Kilkenny, John.....Oregon
Lang, Stillman.....Idaho
Le Doux, John.....Oregon
Lucas, John.....Montana
Lineham, Eugene.....British Columbia
Lineham, Harold.....British Columbia
Lineham, Clifford.....British Columbia
Mahony, Arthur.....Oregon
Mayo, George.....Oregon
Mayea, Laurence.....Oregon
Moore, Nolan.....Oregon
Moore, Wilfred.....Oregon
Malone, Aloysius.....Oregon
Murphy, Eugene.....Oregon
Murphy, Cornelius.....Oregon
Murphy, John.....Oregon
Morrissey, Joseph.....Oregon

Maier, Raymond.....Oregon
Madden, Frank.....Oregon
Murnane, Edmund.....Oregon
Muffley, Lloyd.....Oregon
Maloney, James.....Washington
MacCamy, Harry .....Montana
McKay, Albert.....Oregon
McKenna, Hugh .....Oregon
McDermott, Irving.....British Columbia
Niles, Irving.....Oregon
O'Connor, Raymond.....Oregon
O'Connor, Ronald.....Oregon
O'Connor, Percy.....Oregon
O'Donnell, William.....Oregon
O'Hare, Francis.....Oregon
O'Hanlon, Leo.....Oregon
Orth, Henry.....Oregon
Pasto, George.....Oregon
Purcell, Julius.....British Columbia
Roth, Conrad.....Oregon
Riggs, Claude.....Oregon
Shea, Edmund.....Oregon
Smith, Don.....Washington
Smith, Claude.....Oregon
Smith, William.....Oregon
Smith, Carl.....Oregon
Springer, Joseph.....Oregon
Standefer, James.....Oregon
Sharp, Ivan.....Oregon
Stevenson, Knowles.....Oregon
Shenon, Philip.....Idaho
Shenon, Kenneth.....Idaho
Shenon, Frederick.....Idaho
Sullivan, John.....Oregon
Sharkey, William.....Oregon
Sweeney, Edmund.....Oregon
Senn, Carl.....Oregon
Stanton, Richard.....Oregon
Sarsfield, Frank.....Washington

Twohy, Francis.....Oregon
Tyrrell, Lew.....Oregon
Vandenberg, David.....Oregon
Wilcox, Herbert.....Oregon
Wells, Bruce.....Oregon
Wise, Bernard.....British Columbia
Wise, Joseph.....British Columbia
Zeller, Philip.....Oregon
Zeller, Rudolph.....Oregon

ANNUAL COMMENCEMENT

DIPLOMAS, PRIZES

DIPLOMAS AND CERTIFICATES

Engineering Diplomas in the High School Department were awarded to:

Francis Jacobberger.....Portland, Oregon
John Lucas.....Philipsburg, Montana
Carl Senn.....Portland, Oregon
Philip Shenon.....Salmon, Idaho

Diplomas in the General High School Course were awarded to:

Fred Allen.....Burns, Oregon
Joseph Brown.....Portland, Oregon
Charles Foley.....Burns, Oregon
Orris Knapp.....Port Orford, Oregon
Lawrence Mayea.....Forest Grove, Oregon
Eugene Murphy.....Portland, Oregon
Cornelius Murphy.....Portland, Oregon
Albert McKay.....St. Paul, Oregon
James Maloney.....Montesano, Washington
Irving Niles.....Portland, Oregon
Leo O'Hanlon.....Portland, Oregon
Kenneth Shenon.....Salmon, Idaho

Commercial Certificates in the High School Department were awarded to:

Thomas Burke.....Portland, Oregon
Louis Devonshire.....Montesano, Washington
Lewis Klein .....Portland, Oregon
Raymond Maier.....Portland, Oregon

PRIZES

The Daly Gold Medal, presented by the Reverend William A. Daly, for the student having the best record in the English Essay Contest, was awarded to:
Charles Foley.....Burns, Oregon

Albert McKay was second and Lew Tyrrell third in the contest.

The Christie Gold Medal, presented by the Most Reverend Alexander Christie, D. D., for the student having the best record in one of the regular courses in the High School Department, was awarded to:
George Pasto (97-26-47%).....Portland, Oregon

Closely following came Henry Clarke (97 24-47), Milton Daly (96 39-47), Lawrence Mayea (95 13-40).

The Gold Medal for the first place in the Elocution Contest was awarded to:
Alfred Bennett.....The Dalles, Oregon

Gold Monogram Pins for debating were awarded to:
Leo O'Hanlon.....Portland, Oregon
Lawrence Mayea.....Forest Grove, Oregon
Charles Foley.....Burns, Oregon

who composed the Affirmative Team; and to:
Cornelius Murphy.....Portland, Oregon
Eugene Murphy.....Portland, Oregon
Worth Clarke.....Pocatello, Idaho
who composed the Negative Team.

Special mention for excellent scholarship throughout the entire school year was given to the following students:

F. Allen	I. McDermott	J. Flynn
C. Bailey	H. Orth	A. Casey
W. Clarke	J. Purcell	F. Twohy
B. Doherty	F. Springer	K. Brooke
C. Foley	R. Stanton	B. Wells
H. Lineham	C. Senn	

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IT is desired that every Graduate receive a copy of the Catalogue. The faculty will therefore consider it a favor to be notified in case an Alumnus changes his address. On application to the President, Catalogues will be sent to all who are interested in the work of the University

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